

# **Engineering Design File 1551**

## **Staging, Storage, Sizing, and Treatment Facility (SSSTF)**

### **Waste Acceptance Criteria**

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5. Summary:

This Engineering Design File (EDF) presents the Waste Acceptance Criteria (WAC) to be used by the Staging, Storage, Sizing, and Treatment Facility (SSSTF). The SSSTF is an Idaho National Engineering and Environmental Laboratory (INEEL) Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) remediation facility that will be operated in conjunction with the INEEL CERCLA Disposal Facility (ICDF). The ICDF is a DOE Order 435.1, Resource Conservation and Recovery Act (RCRA, subtitle C), and Toxic Substances Control Act (TSCA)-compliant and CERCLA authorized landfill to be located near the INEEL Nuclear Technology and Engineering Center (INTEC) complex at the INEEL. The ICDF complex includes the ICDF landfill, the SSSTF, an evaporation pond, and the Staging and Storage Annex (SSA), which will be incorporated into the SSSTF.

The current scope of work includes efforts to define WAC for preliminary 30% design efforts for the SSSTF. The task deliverable effort includes the preparation and presentation of a summary EDF for WAC definition to be used for the initial 30% design baseline effort.

This EDF defines the SSSTF WAC and the types of waste to be accepted at the SSSTF.

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## ACRONYMS

AEA	Atomic Energy Act
ALARA	As Low As Reasonably Achievable
AOC	Area of Contamination
ARAR	Applicable or Relevant and Appropriate Requirement
ASTM	American Society for Testing and Materials
Btu	British Thermal Unit
CAMU	Corrective Action Management Unit
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CFR	Code of Federal Regulations
COC	Contaminants of Concern
DOE	U.S. Department of Energy
DOE-ID	U.S. Department of Energy Idaho Operations Office
DOT	U.S. Department of Transportation
DQO	Data Quality Objective
EDF	Engineering Design File
EPA	U.S. Environmental Protection Agency
FFA/CO	Federal Facility Agreement and Consent Order
HWMA	Hazardous Waste Management Act
ICDF	INEEL CERCLA Disposal Facility
ID	Identification Number
IDAPA	Idaho Administrative Procedures Act
IDEQ	Idaho Department of Environmental Quality
IDW	Investigation-Derived Waste
INEEL	Idaho National Engineering and Environmental Laboratory
INTEC	Idaho Nuclear Technology and Engineering Center

ISB	Interim Safety Basis
IWTS	Integrated Waste Tracking System
LDR	Land Disposal Restrictions
NRC	Nuclear Regulatory Commission
OU	Operable Unit
PCB	Polychlorinated Biphenyl
PPE	Personal Protective Equipment
ppm	Parts per Million
RCRA	Resource Conservation and Recovery Act
RD/RA	Remedial Design/Remedial Action
ROD	Record of Decision
RQ	Reportable Quantity
SRPA	Snake River Plain Aquifer
SSA	Staging and Storage Annex
SSSTF	Staging, Storage, Sizing, and Treatment Facility
TBD	To Be Determined
TCLP	Toxicity Characteristic Leaching Procedure
TRU	Transuranic
TSCA	Toxic Substances Control Act
UTS	Universal Treatment Standard
VCT	Vertical Closed Top
VOT	Vertical Open Top
WAC	Waste Acceptance Criteria
WAG	Waste Area Group
WIPP	Waste Isolation Pilot Plant

## DEFINITIONS

The following definitions are presented as an aid to reader understanding of technical and scientific terms used within this document.

**Analytical Residue and Sample Preservative Residue:** Aqueous and organic solutions from sample preservatives and analytical residue generated from field preparation and laboratory analyses.

**CERCLA-derived remediation and removal wastes:** Wastes from CERCLA activities that may include, but are not limited to, soil, water, contaminated personal protective equipment (PPE), filters, and other support equipment that cannot be decontaminated.

**Construction wastes:** Wastes generated during the onsite construction of environmental remedial action activities.

**Contaminated equipment:** Contaminated equipment becomes a waste stream if it cannot be properly decontaminated or reused.

**Contaminated media/contained-in policy:** All media contaminated with listed waste excavated prior to characterization will be assumed to contain listed waste.

**Debris:** Solid material exceeding a 60-mm particle size that is a manufactured object, plant or animal matter, or natural geologic material intended for disposal. However, the following materials are not considered to be debris:

- Any material for which a specific treatment standard is provided in Subpart D of 40 CFR 268, such as lead acid batteries, cadmium batteries, and radioactive lead solids
- Process residuals, such as smelter slag and residues from the treatment of waste, wastewater, sludges, or air emission residues
- Intact containers of hazardous waste that retain at least 75% of their original volume.

A mixture of debris and other material that has not been treated to the standards provided by 40 CFR 268.45 is subject to regulation as debris, if the mixture is composed primarily of debris, by volume, based on visual inspection.

**Drill cuttings:** Cuttings generated from well installation activities. Perched water and Snake River Plain Aquifer water well installation is expected to generate a substantial volume of drill cuttings.

**Facility:** An area within the boundaries of a DOE-controlled site that is access-controlled to prevent public access, for example, TRA, INTEC, and TAN.

**Free liquids:** Liquids that can readily separate from the solid portion of a waste under ambient temperature and pressure (DOE Order 435.1), as demonstrated by "EPA Paint Filter Liquids Test Method 9095."

**Hazardous debris:** Debris that contains a hazardous waste listed in Subpart D of 40 CFR 261, or that exhibits a characteristic of hazardous waste identified in Subpart C of 40 CFR 261.

**Hazardous substances:** Any material designated as such pursuant to the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA), including all RCRA hazardous wastes, radionuclides, a variety of other chemical substances, and any material identified as a hazardous substance such as petroleum, petroleum products, and all hazardous wastes.

**Hazardous waste:** Waste designated as hazardous by the U.S. Environmental Protection Agency (EPA) regulations (40 CFR 261.3) and regulated under RCRA.

**High-level waste:** Highly radioactive waste material. High-level waste results from the reprocessing of spent nuclear fuel, including the liquid waste produced directly during reprocessing. As per DOE Order 435.1, the term refers to any solid material derived from such liquid waste that contains fission products in sufficient concentrations, and to other highly radioactive material that is determined, consistent with existing law, to require permanent isolation. (Adapted from: Nuclear Waste Policy Act of 1982, as amended.)

**Hydraulic spills:** Spills that occur when, during drilling operations, hydraulic fluid leaks from equipment seals or through ruptured hoses.

**Investigation-derived waste:** Materials that are generated from CERCLA investigations, such as drill cuttings, purge water overburden, interstitial and underburden soils, and wastes (debris, sludge, etc.).

**Infectious waste:** Waste containing living organisms that could endanger human health or the health of domestic animals or wildlife by extending the range of biological pests, viruses, pathogenic microorganisms, or other agents capable of infesting, infecting, or extensively and permanently altering the normal populations of organisms.

**Low-level radioactive waste:** Waste that cannot be defined as high-level radioactive waste, spent nuclear fuel, transuranic waste, by-product material (as defined in Section 11e.(2) of the Atomic Energy Act of 1954, as amended), or naturally occurring radioactive material (DOE Order 435.1).

**Miscellaneous waste:** Non-recyclable, unwanted material, such as trash, labels, rags, and other debris.

**Mixed waste:** Waste containing both radioactive components as defined by the Atomic Energy Act of 1954 (as amended), and hazardous components as defined by 40 CFR 262.

**Personal protective equipment:** Items worn or used during waste-handling activities, such as, coveralls, shoe covers, boots, gloves, glove liners, hoods, and duct tape. Coveralls and hoods are generally made of paper or Tyvek. Gloves are generally latex or nitrile, and glove liners are made of disposable cloth material. Shoe covers and boots are generally rubber.

**Purge/development water:** Water generated from well development or during sampling that is removed from a well before samples are collected.

**Radioactive waste:** Solid, liquid, or gaseous material that contains radionuclides regulated under the Atomic Energy Act of 1954, as amended, which is of negligible economic value considering costs of recovery.

**Sample containers.** Vessels composed of steel, aluminum, Teflon, brass, or plastic used to contain samples of water, soil, or other media. Once used, these containers become a waste stream if they cannot be decontaminated for reuse.



**Secondary waste:** A generic category of wastes that are generated from support activities (including operations and maintenance activities) related to retrieving, processing, and packaging the investigation-derived materials. Examples of secondary wastes include waste associated with routine decontamination activities (excluding facility closure), PPE, administrative area and support services wastes, used equipment and filters, and other similar wastes generated during Operation and Maintenance activities.

**Solidification:** A technique that limits the solubility and mobility of hazardous waste constituents through physical means. This process changes the physical state from liquid or semi-solid to a solid.

**Soil waste:** Soils excavated as part of a project that may be contaminated as a result of spill and pipeline leaks or radioactive liquids from plant liquid transfer operations.

**Special Case Waste:** Waste with transuranic constituents exceeding 10nCi/g, PCB waste, and other waste not routinely expected to be processed through the SSSTF. Special case waste may include waste that will be classified as TRU waste following analysis.

**Spent nuclear fuel:** Fuel that has been withdrawn from a nuclear reactor following irradiation and that has not yet been reprocessed to remove its constituent elements.

**Stabilization:** Technique that limits the solubility and mobility of hazardous waste constituents by bonding or chemically reacting with the stabilizing material.

**Structural stability:** A waste form that will generally maintain its physical dimensions and its form under the expected disposal conditions, such as weight of overburden and compaction equipment, the presence of moisture and microbial activity, and internal factors such as radiation effects and chemical changes. Structural stability can be provided by the waste form itself by processing the waste to a stable form or by placing the waste in a disposal container or structure that provides stability after disposal.

**Toxic Substances Control Act (TSCA) waste:** Waste managed strictly under TSCA regulations. Presently only polychlorinated biphenyls (PCBs) and asbestos are regulated under TSCA as waste.

**Transuranic waste:** Per DOE Order 435.1, radioactive waste containing more than 100 nanocuries (3700 becquerels) of alpha-emitting transuranic isotopes per gram of waste, with half-lives greater than 20 years, except for (1) high-level radioactive waste; (2) waste that the Secretary of Energy has determined, with the concurrence of the administrator of the Environmental Protection Agency, does not need the degree of isolation required by the 40 CFR Part 191 disposal regulations; or (3) waste that the Nuclear Regulatory Commission has approved for disposal on a case-by-case basis in accordance with 10 CFR Part 61. (Source: WIPP Land Withdrawal Act of 1992, as amended.)

**Unused and unaltered sample material.** Material that may include excess soil cores from the interbeds, underlying basalt, and groundwater.

# **Staging, Storage, Sizing, and Treatment Facility (SSSTF) Waste Acceptance Criteria**

## **1. INTRODUCTION**

The U.S. Department of Energy Idaho Operations Office (DOE-ID) authorized a remedial design/remedial action (RD/RA) for the Idaho Nuclear Technology and Engineering Center (INTEC) in accordance with the Waste Area Group (WAG) 3, Operable Unit (OU) 3-13 Record of Decision (ROD)<sup>1</sup>.

The ROD requires Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) remediation wastes generated within the Idaho National Engineering and Environmental Laboratory (INEEL) boundaries to be removed and disposed of onsite in the INEEL CERCLA Disposal Facility (ICDF). The ICDF, which will be located south of INTEC and adjacent to the existing percolation ponds, will be an onsite, engineered facility, meeting Resource Conservation and Recovery Act (RCRA) Subtitle C, Idaho Hazardous Waste Management Act (HWMA), and polychlorinated biphenyl (PCB) landfill design and construction requirements. The ICDF will include the necessary subsystems and support facilities to provide a complete waste disposal system.

The major components of the ICDF are the disposal cells, an evaporation pond, and the Staging, Storage, Sizing, and Treatment Facility (SSSTF). The disposal cells, including a buffer zone, will cover approximately 40 acres, with a disposal capacity of about 510,000 cy. Current projections of INEEL-wide CERCLA waste volumes total about 483,800 cy. The SSSTF will be designed to provide centralized receiving, inspection, and treatment necessary to stage, store, and treat incoming waste from various INEEL CERCLA remediation sites prior to disposal in the ICDF, or shipment offsite. All SSSTF activities shall take place within the WAG 3 area of contamination (AOC) to allow flexibility in managing the consolidation and remediation of wastes without triggering Land Disposal Restrictions (LDRs) and other RCRA requirements, in accordance with the OU 3-13 ROD. Only low-level, mixed low-level, hazardous, and limited quantities of Toxic Substances Control Act (TSCA) wastes will be treated and/or disposed of at the ICDF. Most of the waste will be contaminated soil, but debris and Investigative Derived Waste (IDW) will also be included in the waste inventory. ICDF leachate, decontamination water and water from CERCLA well purging, sampling, and well development activities will also be disposed of in the ICDF evaporation pond.

Only INEEL onsite CERCLA wastes meeting the agency approved Waste Acceptance Criteria (WAC) will be accepted at the ICDF. An important objective of the WAC will be to ensure that hazardous substances disposed in the ICDF will not result in exceeding groundwater quality standards in the underlying groundwater aquifer. Acceptance criteria will include restrictions on contaminant concentrations based on groundwater modeling results with the goal of preventing potential future risk to the Snake River Plain Aquifer (SRPA).

This document defines the WAC and the wastes to be accepted at the SSSTF, in order to ensure proper management of the waste.

### **1.1 Applicable Technical and Functional Requirements**

The SSSTF shall accept onsite INEEL CERCLA remediation waste as defined in the CERCLA Waste Inventory Database for either storage, treatment, and/or disposal. Wastes transferred from the SSSTF to the ICDF for disposal shall meet Agency-approved ICDF waste acceptance criteria and applicable RCRA land disposal restrictions.

## **2. WASTE ACCEPTANCE CRITERIA FOR THE SSSTF**

The SSSTF will receive, stage, store, treat, and prepare CERCLA wastes for disposal at the ICDF or offsite facility. The generator responsible for the waste must understand the basic WAC to ensure proper management of the waste. Figure 2-1 provides the logic flow diagram for the SSSTF waste acceptance from the generation of waste at the CERCLA site to SSSTF submittal. The following sections provide information to help the generators determine whether the wastes are acceptable at the SSSTF before the generator completes the Waste Profile sheet (see Appendix A).

All wastes received at the SSSTF must be packaged and properly analyzed by the generator prior to transfer to the SSSTF staging area. Waste that does not meet these WAC will be reviewed on a case-by-case basis, and accepted only after proper authorization and approval.

The following are primary elements of the SSSTF acceptance requirements:

- Criteria Basis
- General Requirements
- Waste content or concentration accepted at the SSSTF
- Waste form and container requirements
- Exceptions to WAC requirements (case-by-case acceptance)
- Prohibitions
- Non-Conforming Waste.

The following sections are developed to ensure that waste received at the facility can be safely managed.

### **2.1 Criteria Basis**

The basis for acceptance criteria includes protection of human health and the environment, compliance with the requirements of the ICDF complex, control of waste form, and compliance with environmental regulations as authorized by the OU 3-13 ROD (see Reference 1) applicable or relevant and appropriate requirements (ARARs). Each of these bases is described below.

#### **2.1.1 Protection of Human Health and the Environment**

The use of institutional controls and operational procedures will ensure that the SSSTF is protective of human health and the environment. Worker protection shall be provided by compliance with the requirements of the INEEL health and safety requirements. Waste handling at the SSSTF shall be consistent with maintaining worker exposure as low as reasonably achievable (ALARA), as per DOE Order 5400.5.

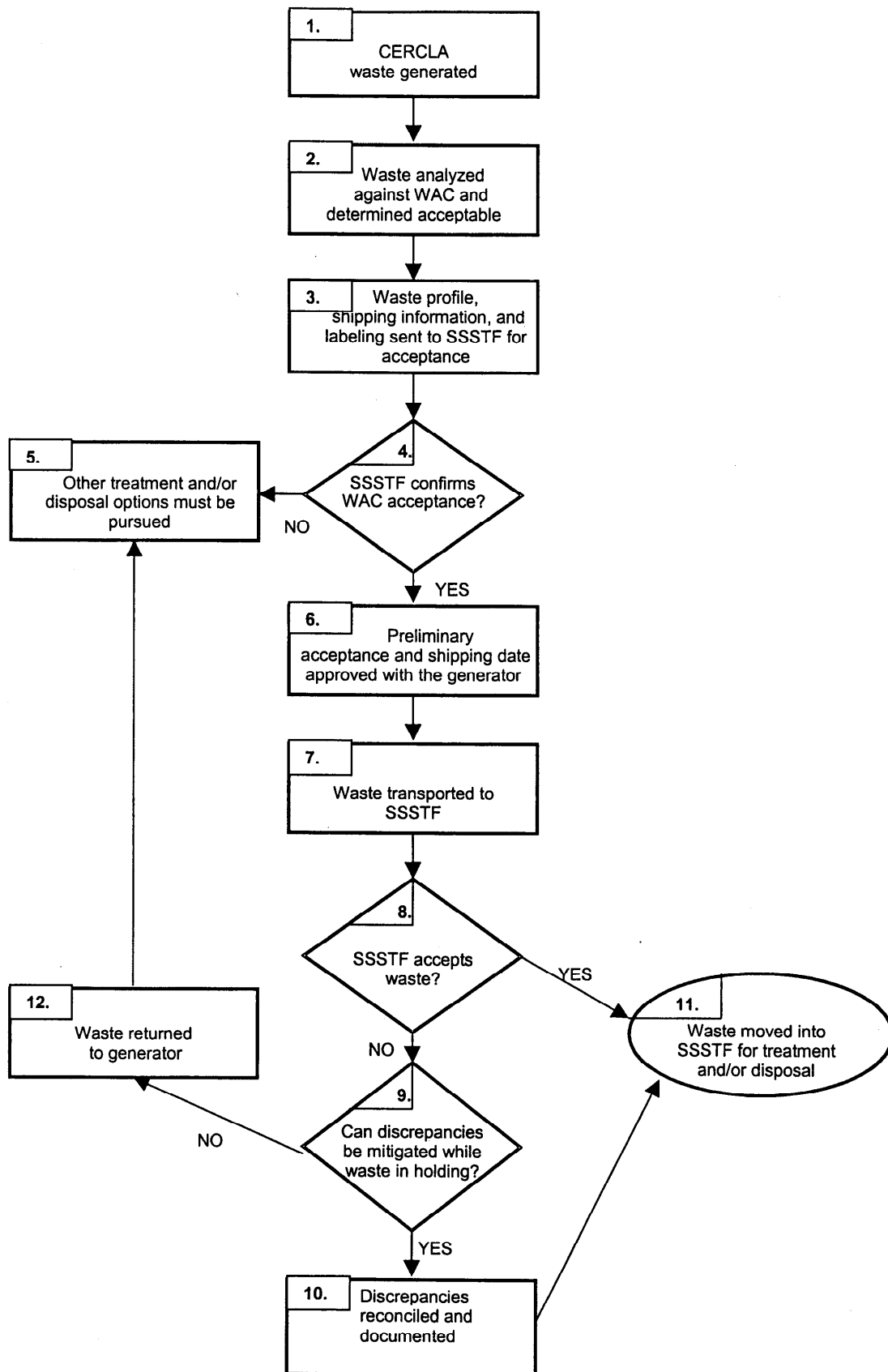


Figure 2-1. Logic flow diagram for the SSSTF WAC.

### **2.1.2 Compliance with Other ICDF Complex WACs**

This WAC focuses on the requirements associated with SSSTF storage and treatment processes. WAC requirements for the SSSTF must also remain consistent with WAC requirements for the SSA and accept only those wastes which can successfully be treated to meet the ICDF landfill WAC, ICDF evaporation pond WAC, or other off-site disposal facility WAC, if applicable. Appropriate WAC requirements must be met in order to ensure protection of human health and the environment and to reduce costs associated with potential duplication of analysis or inappropriate/unsuccessful treatment of waste.

### **2.1.3 Waste Form Control**

The physical form of the waste shall be controlled to minimize void space and to facilitate loading, transportation, and unloading of waste. The SSA WAC prescribes additional packaging information on the waste form. In order to meet the SSSTF requirements, generators must meet the packaging requirements as defined in the *Waste Management Plan for the SSA*.<sup>2</sup>

### **2.1.4 Compliance with Environmental Regulations**

Waste accepted at the SSSTF must meet applicable ARARs as outlined in *SSSTF/ICDF Operational Scenario and Process Flows*<sup>3</sup>. Prior to the waste being shipped, the WAG 3 designee must accept the generator's Waste Profile sheet to ensure compliance with the appropriate environmental regulations.

## **2.2 General Requirements**

### **2.2.1 Characterization**

The formal characterization/designation process for radioactive and/or RCRA-regulated wastes will be implemented. Waste streams will be identified and designated, and the LDR status determined during the planning stages of the project and designated prior to shipment. Prior to unanalyzed waste being shipped to the SSSTF, a waste profile will be completed utilizing process knowledge. If waste, from within the WAG 3 Area of Contamination (AOC), without analytical information, appears to meet the WAC it can be accepted for staging and storage. Further analysis, while such waste is at the SSA, may be required. If the total metals are greater than  $20 \times$  the LDR, a verification Toxicity Characteristic Leaching Procedure (TCLP) may be required.

### **2.2.2 Use of Process Knowledge for Waste Designation**

When a waste designation is based solely on process knowledge, the generator must ensure that the chemical, physical, and radiological properties of the waste are adequately determined. The designation must be accomplished with sufficient accuracy to ensure that subsequent treatment, storage, or disposal of the waste protects human health and the environment.

Using process knowledge, the generator of a solid waste may declare the waste hazardous in lieu of testing. Declaration of a solid waste as hazardous subjects the waste to associated treatment, storage, and/or disposal requirements, per 40 CFR 264. The organization responsible for the management of a declared hazardous waste may use acceptable knowledge, such as analytical results, to reverse the declaration as long as impermissible dilution has not occurred. When a waste is declared hazardous, designation records shall so indicate to document the quality of knowledge used to complete the waste designation.

### 2.2.3 Land Disposal Restriction Requirements.

The applicability and institutions of LDRs for waste outside WAG 3 AOC are outlined below:

- Total metals  $>100 \times \text{UTS}$  ( $100 \times \text{Phase IV LDRs organics}$ )—Waste will be reviewed and accepted on a case-by-case basis, in order to meet the appropriate disposal facility WAC.
- Total metals  $<100 \times \text{UTS}$ —Meets SSSTF requirements and will be treated to meet the appropriate disposal facility WAC.

The applicability and institutions of LDRs for liquid waste for evaporation ponds include:

- Evaporation Pond Corrective Action Management Unit (CAMU) ROD (see Reference 1)
- LDRs not applicable [40 CFR 552(a)(1)]

## 2.3 Wastes Accepted at the SSSTF

Waste generated from CERCLA activities conducted under the Federal Facility Agreement and Consent Order (FFA/CO), such as investigation-derived waste (IDW) and remedial wastes, will be accepted at the SSSTF. In addition, CERCLA waste generated from removal actions is also CERCLA waste and is a candidate for acceptance into the SSSTF.

The generator must fill out a Waste Profile sheet for generated waste listed in Table 2-1, then obtain WAG 3 Site designee approval before shipping the waste to the SSSTF. Table 2-1 summarizes the types of waste that are accepted at the SSSTF.

Each of the wastes listed in Table 2-1 is further described in a subsequent section, and guidelines for the Waste Profile sheet (see Appendix A) appear in Section 3. Operating Method 1 of Appendix B details the Waste Profile sheet and completion process. Table 2-2 summarizes the types of regulated wastes that may be candidates for SSSTF operations.

### 2.3.1 Nonhazardous/Nonradioactive Solid Waste

Nonhazardous/nonradioactive solid waste is defined as articles, materials, and substances that are no longer of practical use, have no commercial value, and do not meet the definition of hazardous waste or radioactive waste. Primary examples of nonhazardous/nonradioactive waste are office waste and inert demolition waste [40 CFR 261.2(a)(1) and (2) and IDAPA 58.01.05.005]. Preferably, this type of solid waste will be transferred to the INEEL landfill complex rather than be accepted at the SSSTF. However, in the event that the CFA landfill cannot accept the solid waste, the SSSTF may then accept the waste for disposal.

### 2.3.2 Hazardous Waste

Hazardous waste is defined in 40 CFR 261 Subparts C and D of the RCRA. The SSSTF can accept D-code characteristic waste, F-listed wastes, and most P-code and U-code wastes. Waste characterization will be based on comparison to the TCLP regulatory levels. If total concentrations exceed the TCLP regulatory levels for characteristic waste by the application of the 20 $\times$  rule, then TCLP analysis may be necessary to determine if the waste is RCRA characteristic. This determination will be made at the discretion of the WAG 3 Site designee.

**Table 2-1. Summary of SSSTF WAC.**

Waste Type Accepted at the SSSTF	Concentration/Content Accepted
Nonhazardous/ Nonradioactive waste (i.e., industrial waste)	Waste must be certified to contain no hazardous or radioactive component. Additionally, generator must justify to the WAG 3 Site designee why the waste is not disposed at the INEEL landfill.
Hazardous Waste	If metals total concentrations exceed the regulatory limits by the application of the 20× rule, then TCLP analysis may be necessary to determine if waste requires treatment. This determination will be made on a case-by-case basis. Additionally, organic waste exceeding 100x the Phase IV LDRs will be reviewed and accepted on a case-by-case basis.
Radioactive Waste	Both a radiation count and speciation are required for radioactive waste. Radionuclide content of waste against the various limits listed is provided in Appendix B.
Transuranic (TRU) Waste (from within WAG 3 AOC)	TRU waste will only be accepted from within the WAG 3 AOC. TRU waste will be temporarily stored, treated, and/or packaged at the SSA/SSSTF until final disposition is determined. Without regard to source or form, waste that is contaminated with alpha-emitting, transuranic radionuclides with half-lives greater than 20 years and concentrations greater than 100 nCi/g at the time of assay is considered TRU waste. Heads of Operations Offices (e.g., DOE-ID) may determine if other alpha-contaminated waste, peculiar to a specific site, must be managed as TRU waste (DOE Order 435.1).
Special Case Waste	Special case waste will be accepted for temporary storage until final disposal is determined.
Mixed Waste	Mixed waste must meet both the hazardous and radioactive WAC.
Purge/Development Water	Liquid waste may be accepted for disposal to the ICDF evaporation pond on a case-by-case basis. All WAG 3 liquid waste will be accepted.
Drill Cuttings	Drill cuttings will be accepted at the SSSTF.
TSCA Waste (including mixed TSCA waste)	TSCA waste will be accepted into the SSSTF.

**Table 2-2.** Regulated waste accepted at the SSSTF.

Regulated waste expected to be stored	Liquid	Solid	Case by Case
Ignitable			X
Corrosive			X
Reactive			X
TCLP/Toxic Metals	X	X	
Volatile Organics	X	X	
Semi-Volatile Organics	X	X	
Chlorinated Solvents			X
P/U Listed Waste			X
Lab Packs	X	X	X
Compressed Gas			X
Pending analysis*	X	X	
Asbestos			X
PCBs	X	X	
Radioactive	X	X	
Mixed Waste	X	X	

\*This pertains to waste within the WAG 3 AOC only. Prior to unanalyzed waste being shipped to the SSA, a waste profile will be completed utilizing process knowledge. If waste, without analytical information, appears to meet the WAC it can be accepted for staging and storage. Further analysis while at the SSA may be required.



Table 2-2 outlines the specific wastes that may be candidates for SSSTF operations. The types of hazardous wastes accepted at the SSSTF are further defined in the following subsections.

**2.3.2.1 Commercial Chemical Product Wastes.** Commercial chemical products are also called the P- and U-listed waste. These lists consist of specific commercial chemical products or manufacturing chemical intermediates and include chemicals (such as chloroform and creosote), acids (such as, sulfuric acid and hydrochloric acid), and pesticides (such as DDT).

**2.3.2.2 Nonspecific Source Waste.** Nonspecific source waste is generic waste, commonly produced by manufacturing and industrial processes. The waste is called F-listed because its hazardous waste codes begin with "F." Examples from this list include spent halogenated solvents used in degreasing and wastewater treatment sludge from electroplating processes, as well as dioxin waste.

**2.3.2.3 Characteristic Waste.** Characteristic waste exhibits one or more of the characteristics listed below and is designated by a waste code. Waste that has been characterized as ignitable, corrosive, or reactive will be reviewed on a case-by-case basis by the WAG 3 designee.

- Ignitability is the first of the four hazardous waste characteristics. The waste code for toxicity is D001 (40 CFR 261.21).
- Corrosivity is the second hazardous waste characteristic. The waste code for corrosivity is D002 (40 CFR 261.22).
- Reactivity is the third hazardous waste characteristic. The waste code for reactivity is D003 (40 CFR 261.23).
- Toxicity is the fourth hazardous waste characteristic. The waste codes are labeled D004 through D043, and consist of heavy metals and organic wastes. The determination of the waste codes is based on the concentration of contaminants that will leach from the waste. Those concentrations are determined either through use of TCLP, which is found in Appendix II of 40 CFR 261, or through process knowledge. The waste codes and their corresponding threshold limits are listed in Appendix A of this report.

During environmental restoration operations, certain activities may result in the use or handling of lead, which can be identified as either waste or a recyclable material. The generator should exercise the option to recycle prior to shipping lead for disposal. When lead is identified as waste, it must be handled in compliance with applicable regulatory requirements.

**2.3.2.4 Listed Waste.** The listed waste review generally will rely on readily available documents gathered as a part of the standard CERCLA site evaluation, such as analytical methods and process knowledge. In the event that listed waste sources are suspected (but not confirmed), the scope of the review will be augmented to target specific operating procedures. For CERCLA units where listed waste sources are reasonably expected, standard operator interviews should be documented as necessary to ask questions specifically aimed at identification of potential sources.

Operator interviews indicating the potential presence of a listed waste source may result in the need for more detailed review of contemporary documentation to confirm the presence of the source, and any such documentation will be included with the Waste Profile. Operator interviews will not be used as the basis for an affirmative listed waste determination in the absence of confirmatory documentation or physical evidence. Reviews will include evaluations of process knowledge, with respect to the following:

- Listed waste may be designated based on process knowledge and/or analytical data.
- Listed wastes are source-dependent—the mere existence of a particular constituent in a waste stream does not cause a waste to be a listed waste nor does the lack of a detectable constituent cause a waste not to be listed. Knowledge about the constituent's source shall be used to establish a listed waste designation.
- If no analytical data or source knowledge exists, the waste need not be designated as a listed waste.
- Listed codes shall be identified on the Waste Profile Sheet. Once the sheet has been approved, that waste is accepted into the landfill.

**2.3.2.5 Other Hazardous Waste.** Other hazardous waste that may be accepted on a case-by-case basis at the SSSTF include:

- Organic Liquids and Chelating Compounds—Unstabilized organic liquids (including sorbed organic liquids) exceeding 1% of the waste by weight and unstabilized chelating compounds exceeding 1% of the waste by weight will be accepted. Some waste will not be completely characterized and may contain organics. Organic compounds exceeding  $100 \times$  the LDR will be reviewed and accepted on a case-by-case basis.
- Lab Packs—Only lab packs that contain CERCLA-generated waste will be accepted at the SSSTF. Lab Packs are drums containing several smaller containers of compatible waste chemicals. Lab Packs shall be packaged so that there are no incompatible materials in each container. The container must be filled with a sufficient volume of absorbent to absorb twice the volume of liquid in the container to make them safe for transport.
- Debris—Debris is contaminated solid waste that is greater than 60-mm in diameter or particle size, as per 40 CFR 268.2(g). Examples include lumber, concrete and PPE. Contaminated soils and sludges are NOT classified as debris.
- Other Liquids, Sludges, and Solids—These are generally accepted unless specifically restricted above.

### 2.3.3 Radioactive Waste

Radioactive wastes are materials contaminated with unwanted radioactive materials regulated by DOE Order 435.1. The SSSTF is able to receive radioactive wastes for storage and/or treatment, including, but not limited to, miscellaneous trash, respirator cartridges, gloves, glassware, protective clothing, wood and construction materials, and paper/plastic. This also includes liquids, liquids mixed with solids, sludges, soils, debris, or any combination of these.

The types and amounts of radioactive materials that qualify for acceptance at the SSSTF are summarized below. The radioactive WAC provides the information necessary to receive, store, hold for decay, process and dispose of radioactive waste in full compliance with state and federal regulations. The generator must have the Waste Profile sheet completed to assure no delays in the review. Instructions for completing the Waste Profile sheet are further described in Section 3.

- Radiological Concentration Limits. The methodology for classification of the radionuclide content of waste is provided in Appendix B.

- TRU Waste. TRU waste exceeds 100 nanocuries per gram of TRU constituents, per DOE Order 435.1. The net weight of the waste (excluding the weight of the container and shielding) must be used to calculate the specific activity of the waste in each container. Only TRU waste generated inside of the WAG 3 AOC will be accepted for storage at the SSA/SSSTF only until the waste can be treated and/or packaged at the SSSTF or other facility and the waste sent to an appropriate disposal facility that manages TRU wastes. TRU waste generated outside of the WAG 3 AOC will not be accepted for storage and/or treatment at the SSSTF.
- Mobile Radionuclides. If the concentration of any mobile radionuclide exceeds the Mobile Radionuclide Reporting Limit listed in Appendix B, Table B-2, stabilization may be required prior to disposal. This stabilization may be accomplished at the SSSTF or other treatment facilities as the capacity becomes available. Following stabilization, disposal may occur on-site at the ICDF or at an off-site disposal facility in compliance with the applicable WAC.
- Interim Safety Basis (ISB) Limits. Waste must meet the applicable ISB limits for the SSSTF (as calculated by method B7 of Appendix B), with the following exception: if a combustible waste exceeds the combustible waste limit, but does not exceed the noncombustible waste limit, an evaluation will be conducted to determine whether segregation or stabilization can be used to mitigate the combustibility hazard [40 CFR 264.314(e)]. This type of waste will be reviewed on a case-by-case basis.
- Sealed Sources. Sealed sources are encapsulated or hermetically sealed by a manufacturer for the purpose of maintaining the integrity of the source and preventing contamination. Typically, sealed sources are radioactive sources used for calibration or equipment checks, gauging devices, or similar uses. Authorization for the receipt of sealed sources will be on a case-by-case basis.
- Uncharacterized IDW and CERCLA Remediation Waste. This waste is normally generated during INEEL CERCLA field investigations awaiting analysis or other pending documentation requirements. It may include indigenous wastes (i.e., drill cuttings, purge/development water, soils, sludges, and unaltered samples) and nonindigenous waste (e.g., contaminated PPE, samples altered during analysis, and other waste materials generated from collecting and analyzing samples or drilling and installing wells, borings, and test pits). The generator is responsible for ensuring that the waste is properly characterized and for including a Waste Profile sheet before the waste can enter into the SSSTF.

#### **2.3.4 Mixed Waste**

Mixed wastes are wastes that contain both a hazardous waste component, regulated under RCRA, and a radioactive waste component, regulated under the Atomic Energy Act (AEA). The SSSTF will accept waste that meets both the hazardous and radioactive criteria, including TSCA-regulated waste. PCB-TSCA regulated wastes will not be accepted at the SSSTF.

#### **2.3.5 Purge/Development Water**

Purge/development water is waste from groundwater withdrawn from wells for:

- Developing newly constructed groundwater monitoring wells

- Purging existing wells prior to sample collection
- Testing aquifers
- Periodic cleaning and renovating of existing groundwater monitoring wells.

The SSSTF will accept purge/development water for disposal at the ICDF evaporation pond.

### 2.3.6 Drill Cuttings

Drill cuttings must comply with the WAC outlined for hazardous, radioactive, or mixed waste requirements defined above to be accepted at SSSTF.

### 2.3.7 Toxic Substance Control Act Waste

TSCA waste will be accepted at the SSSTF facility on a case-by-case basis.

## 2.4 Waste Form and Container Requirements

At this time, all waste forms can be accepted by the SSSTF, either temporary storage and/or treatment operations, as long as they are packaged and contained appropriately for the waste form and type that is generated. Waste generators must meet the packaging and containerization requirements described in the *Waste Management Plan for the SSA*<sup>2</sup>. If metals total concentration exceeds the LDRs by the application of the 20× rule, the TCLP analysis may be necessary to determine if the waste is characteristic waste under the RCRA, although the waste can be accepted for storage at the SSSTF area regardless of that determination. Technology, design, and existing INEEL waste management capabilities will be used to minimize the use of nonstandard waste packages, which will be approved on a case-by-case basis. Requests for nonstandard packing and material shall, as a minimum, address the following:

- Description and justification of nonstandard features
- Nonstandard packaging design, as applicable
- Compatibility analysis for chemical characteristics and packaging for nonstandard material form
- Container operating procedure, as applicable
- Special handling equipment or requirements
- Rigging design and proof of load test, as applicable
- Transportation system, as applicable
- Transport plan, as applicable.

Specific packaging of hazardous materials shall comply with the Hazardous Materials Table in 49 CFR 172.101.<sup>4</sup>

## 2.5 Exceptions to WAC Requirements (Case-by-Case Acceptance)

Some waste types may be encountered that have not been included in the SSSTF design effort. If this should occur, these waste types will be reviewed and may be accepted on a case-by-case basis. Table 2-3 lists those items that may be considered for acceptance on a case-by-case basis.

**Table 2-3.** Summary of Items to be Reviewed on a Case-by-Case Basis.

Waste Type	Description
Gaseous Waste	Gaseous waste packaged at pressures exceeding 1.5 atmospheres (152 kilopascals absolute pressure) at 20°C (68°F). Ignitable Waste (D001) Corrosive Waste (D002)
Unstabilized Organic liquids >1% of waste/weight	Includes sorbed organic unstabilized chelating compounds >1% of waste/weight
Waste capable of detonation or explosive reaction	Waste capable of detonation or explosive reaction if subjected to a strong initiating source. Waste that is readily capable of detonation or explosive decomposition or reaction at standard temperature and pressure. Waste that is a forbidden explosive as defined in 49 CFR 173.54, or a Class 1 explosive, Division 1.1, Division 1.2, Division 1.3, and Division 1.5, as defined in 49 CFR 173.50.
Waste that Generates Toxic Gases, Vapors, or Fumes	Waste that might generate toxic gases, vapors, or fumes in concentrations that reasonably could be expected to exceed occupational exposure limits and/or air emission standards before disposal (DOE Order 435.1).
Infectious/Biological Waste	These wastes are not anticipated to be generated at a CERCLA site but will be considered for acceptance if generated.
Used Oil	If used oil is deemed nonrecyclable, it may be accepted at the SSSTF for repackaging and offsite disposal. Used oil is regulated under 40 CFR 279 and is any petroleum-based oil that has become contaminated or rendered unusable. This also includes used oil filters, which are oil filtration devices that have become contaminated by use.
Heat Generation Waste	If heat generation from radiological decay in the waste package exceeds 3.5 W per cubic meter (0.1 W per cubic foot), the package must be evaluated to ensure that the heat does not affect the integrity of the container or surrounding containers in the SSSTF. This evaluation of waste and the container must be approved by the SSSTF Site Operations Manager.
TSCA Waste	Waste regulated by the Toxic Substance Control Act is defined by 40 CFR 761.60. This type of waste includes PCBs and asbestos (40 CFR 763).
Uncharacterized IDW and CERCLA remediation/ removal waste	This waste is normally generated during INEEL CERCLA field investigations awaiting analysis or other pending documentation requirements. It may include indigenous wastes (i.e., drill cuttings, purge/development water, soils, sludges, and unaltered samples) and nonindigenous waste (e.g., contaminated PPE, samples altered during analysis, and other waste materials generated from collecting and analyzing samples or drilling and installing wells, borings, and test pits). The SSSTF designee must be contacted to determine accessibility prior to shipment to the SSSTF.

## 2.6 Prohibitions

The waste types not currently accepted by the SSSTF are listed in Table 2-4.

**Table 2-4.** Summary of Wastes not accepted at the SSSTF.

Waste Type	Comment
High Level Waste	Highly radioactive waste material, including the liquid waste, resulting from the reprocessing of spent nuclear fuel, will not be accepted.
TRU Waste (Outside of the WAG 3 AOC	TRU waste that was generated outside of WAG 3 AOC will not be accepted.
Recyclable Materials	Material that can be used or reused for another purpose, or reclaimed for use as deemed acceptable by the INEEL Waste Minimization organization, should not be brought to the SSSTF for disposal.

## 2.7 Nonconforming Waste

If fingerprinting acceptance screening procedures, as identified in Figure 2-1, indicate that waste is unacceptable or inappropriate material for the SSSTF, or is material significantly different from that profiled for SSSTF storage, the WAG 3 designee will contact the generator to determine further action.

### **3. WASTE PROFILE PROCESS**

#### **3.1 General Requirements**

At a minimum, a waste proposed for staging, storage, and/or treatment operations at the SSSTF will undergo analysis for radionuclides, metals, cations, anions, and organics, as necessary, and if the hazardous constituent results exceed 20× the TCLP analysis may be performed on each waste unless process knowledge confirms that these activities are not needed or necessary.

Both direct and indirect methods are used to characterize waste. Selection of the method depends on the parameters being measured, hazards associated with acquiring the information, and the amount and quality of data needed. When capable of yielding sufficient information, indirect methods are preferred for obtaining the characterization data, as is consistent with ALARA requirements. Acceptable knowledge can be effective when waste behavior is well known and highly controlled for a predictable product.

Examples of acceptable knowledge elements are:

- Auditable records
- Description of correlation with other processes
- Identification of supporting documentation
- Documented procedures.

#### **3.2 Data Quality Objectives**

The Data Quality Objectives (DQOs) process, or a comparable process, will be used to identify characterization parameters and acceptable uncertainty in characterization data. The intent is not to recharacterize using DQO identified waste streams, but to ensure that new waste streams are identified and generated, and/or that existing streams are significantly modified. DQOs can be used as supporting documentation from the waste generators when they are providing information to meet the WAC.

#### **3.3 Waste Profile Sheet**

A Waste Profile Sheet, as shown in Appendix A, will be required for each waste entering the SSSTF. The generator of the waste will provide a completed Waste Profile Sheet a minimum of 2 weeks prior to anticipated shipping.

The waste generator must include the following information on the Waste Profile Sheet:

- Documented Quality Assurance Program
- Procedures used for sampling, packaging, transporting, laboratory analysis, and data control
- Documentation of procedure/process controls.

In addition, the generator may be required to provide the following information to the WAG 3 designee:

- Documentation of data change control process
- Training
- Analytical results
- Radioactivity (concentration and speciation)
- Process knowledge
- Physical description
- Hazardous Waste Determination
- LDR determination (if applicable, for hazardous waste from outside the WAG 3 AOC)
- CERCLA database number
- Volume/Quantity
- Container and packaging type
- Container identification and labeling.

Other information/analysis results that may be required include, but are not limited to, the following:

- Paint Filter
- Reactivity
- pH/Corrosivity
- Special analytical process required for a specific waste type
- Organic contaminants of concern (COCs) for soils (20× LDR).

Testing will include the radiological screening results, and the results of these tests will be filed with the copies of the Waste Profile sheets and all other supporting material for each waste.

The waste generator will provide a copy of the analytical results attached with the Waste Profile sheet. The nonintrusive inspection will be conducted at the time the waste is received at the SSSTF and documented by the WAG 3 designee. Acceptance will be complete when the WAG 3 designee signs the appropriate line on the Waste Profile sheet.



The WAG 3 designee can use the information contained on the Waste Profile sheet to alert future disposal contractors of possible disposal restrictions. If, at the time of screening, the waste determination does not meet the profile, the SSSTF Site Operations Manager will work with the generating WAG until an accurate determination can be made or will arrange for further actions.

### **3.4 Waste Profile Reevaluation Process**

The WAG 3 designee will reevaluate a Waste Profile under the following conditions:

- The process generating the waste has changed
- Inspection or analysis indicates that the waste received at the SSSTF does not match the waste identified on the accompanying preacceptance documentation or is not compliant with this WAC.

When a profile is reevaluated, the generator may be requested to do one or more of the following:

- Verify that the current Waste Profile is accurate
- Supply a new Waste Profile
- Submit a sample for parameter analysis.

### **3.5 Waste Certification Form**

The certification program ensures generator responsibility and accountability of the waste being sent to the SSSTF for disposal. The Waste Certification Form, shown in Appendix A, is attached to the Waste Profile Sheet after the waste is shipped to the SSSTF. The following details pertain to the waste certification process:

- The Waste Certification Form must be signed, certifying that the waste meets appropriate requirements.
- A Waste Certification Form is used again when the waste is transferred out of the SSSTF to a designated facility. This form is attached to the Waste Profile information from the receiving organization.
- If the waste is shipped off-site from the SSSTF, U.S. Department of Transportation (DOT), EPA, Idaho Department of Environmental Quality (IDEQ), and DOE 460.1A requirements will apply. No waste will be shipped off-site without proper approvals.
- The SSSTF will designate a Certification Official who has the authority to release and sign the Waste Certification for waste leaving the SSSTF and verify the signature on the Waste Certification Form incoming to the SSSTF.

The Waste Certification Form will be recorded and maintained in accordance with DOE-ID policy and applicable ARARs.

## 4. REFERENCES

1. U.S. Department of Energy Idaho Operations Office, *Final Record of Decision Idaho Nuclear Technology and Engineering Center*, Operable Unit 3-13, Idaho National Engineering and Environmental Laboratory, DOE/ID-10660, Rev. 0, October 1999.
2. U.S. Department of Energy Idaho Operations Office, *Waste Management Plan for the Staging and Storage Annex*, DOE/ID-10800, Draft Final, Rev. B, August 2000.
3. Bechtel BWXT Idaho, LLC, *SSSTF Operational Scenario and Process Flows*, EDF-1543, DRAFT, Rev. 0, August 2000.